



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,254	10/02/2003	Tomoaki Takahashi	Q77810	3450
23373	7590	02/09/2006	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			ADDISON, KAREN B	
			ART UNIT	PAPER NUMBER
			2834	

DATE MAILED: 02/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/676,254

Applicant(s)

TAKAHASHI, TOMOAKI

Examiner

Karen B. Addison

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 16-32 is/are pending in the application.
- 4a) Of the above claim(s) 10-15 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-19 and 22-25 is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4-9, 20-21, 26-32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of claims 1-9,16-32 in the reply filed on 11/1/05 is acknowledged.

### ***Claim Objections***

1. Claims 4-9,20-21 and 26-32 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim can't depend from and multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

### ***Allowable Subject Matter***

2. Claims 16-19,22-25 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Prior art fails to show, the first windows and the second windows staggered from each other at a pitch which is a half of the predetermined pitch in the vibrator arrangement direction. Prior art also fail to show, the piezoelectric actuator unit having a plurality of piezoelectric vibrators arranged in one row, at a pitch, which is a half of the predetermined pitch in correspondence with the plurality of pressure chamber.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2834

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 –3, are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuyoshi(US2001/0017503).

Tsuyoshi discloses a piezoelectric vibrator unit in fig.1-12 comprising: a plurality of piezoelectric vibrators(4) formed by alternately laminating electrode layers(32) and piezoelectric material layers(31) so as to vibrate in a lamination direction of the layers, wherein: the plurality of piezoelectric vibrators are arranged in one row in a direction of vibrator arrangement perpendicular to the lamination direction, each piezoelectric vibrator includes an area on one side(23a) and an area on the other side(23b) in a vibrator width direction perpendicular to both the lamination direction and the vibrator arrangement direction, either of the area on one side and the area on the other side forms an active part(23a) capable of performing piezoelectric deformation, and the other area forms an inactive part(23b) incapable of performing piezoelectric deformation, an arrangement of the active part and the inactive part is opposite between adjacent piezoelectric vibrators, each piezoelectric vibrator has an individual electrode layer on a drive voltage input side fig.2(29), and all of said individual electrode layers of the plurality of piezoelectric vibrators(32) are exposed on one side of the piezoelectric actuator unit in the vibrator width direction. Tsuyoshi also show, a plurality of piezoelectric vibrators which include electrode layers on a reference potential side(located at 32), and all of the common electrode layers (29)of the plurality of piezoelectric vibrators are exposed on the other side of said piezoelectric actuator unit in said vibrator width direction. Wherein, via an inactive wall incapable of performing

• Art Unit: 2834

piezoelectric deformation and extending overall in the vibrator width direction between the piezoelectric vibrators, the plurality of piezoelectric vibrators are integrally formed without being separated from each other. Wherein: respective said plurality of piezoelectric vibrator are formed independently, and said plurality of piezoelectric vibrators are integrally fixed by a fixing substrate(22) arranged on one side of said actuator unit in the lamination direction. Wherein said fixing substrate is formed by free-cutting ceramic and the actuator(4) further comprise external drive means(24a) configured to drive the plurality of piezoelectric vibrators (24)and the individual electrode layer(32) of the plurality of piezoelectric vibrators are electrically connected to the external drive(24a) means on one side of the piezoelectric unit.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen B. Addison whose telephone number is 571-272-2017. The examiner can normally be reached on 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

• Art Unit: 2834

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KBA  
1/16/06

  
DARREN SCHENBERG  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800